DDM+ HTU-CM

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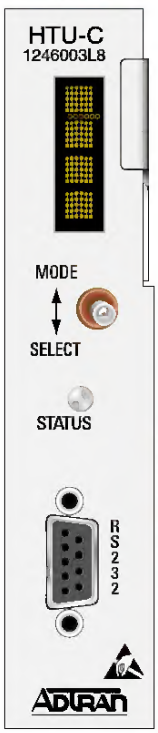

LED STATUS

STATUS	GREEN	Synchronization
	FLASHING	ES, SES or BPV detected
	YELLOW	Loopbacks active
	FLASHING	In-band loopbacks armed
	RED	Alarm on any HTU-C loops, HRE loops, DSX or DS1 interface
	FLASHING	Signal Quality of 0 or No Sync on at least one loop

4 CHARACTER DISPLAY (FCD) OPERATION

MODE

SELECT

UP = MODE
CENTER = OFF
DOWN = SELECT

FCD Modes

Mode	Display	Function
Status	STAT	HDSL loop margin, displays 1=xx or 2=xx, where xx=loop margin 0-2 marginal signal quality, 3-29 acceptable signal quality
Display Off	Blank	Result after five minutes of no activity
View	VIEW	View current parameters without changing
Provisioning	PRDV	Set configuration options
Default	DFLT	Sets all factory defaults
Loopback	LPBK	Select and execute HDSL circuit loopbacks

Status/Alarm Display ("STAT")

Message	Condition
HER1	CRC error detected on HDSL Loop 1
HER2	CRC error detected on HDSL Loop 2
LERR	Frame bit error (SF Mode) or CRC error (ESF Mode) detected locally at DSX-1 of the HTU-C
RERR	Frame bit error (SF Mode) or CRC error (ESF Mode) detected locally at DS-1 of the HTU-C
LBPV	Bipolar Violation (BPV) detected locally at DSX-1 of the HTU-C
RBPV	BPV detected locally at DS-1 of the HTU-R
LDS1	No synchronization of HTU-C and HTU-R on Loop 1
LDS2	No synchronization of HTU-C and HTU-R on Loop 2
LLDS	DSX signal is absent from the network interface or is of a format which does not match the provisioning of the HDSL circuit
RLDS	DS1 signal is absent from the network interface or is of a format which does not match the provisioning of the HDSL circuit
ARM	The loopback arming sequence has been detected

HTU-R Options Display ("VIEW")

Message	Description	Settings	Default
TXLV	DS1 Transmit Level	0 dB, -15 dB	0 dB
PRM	Performance Reporting Messages	NPRM, SPRM, None	None

Parameter Settings Display ("PRDV")

Message	Description	Settings	Default
LBO	DSX-1 Transmit Level	0, 133, 266, 399, 533	0
CODE	Line Code	AMI, B8ZS	B8ZS
FRMG	DSX-1 Framing	AUTO, ESF, SF, UNF, FFFC	ESF
NELB	New England 1:5 loopback	EN, DIS	DIS
NLBK	NIU Loopback	EN, DIS	EN
LBTO	Loopback Timeout	0, 120	120
CLDS	Customer Loss Response	AIS, LPBK, CDI	AIS
LTCH	Latching Loopback	T1, FT1	T1
SPWR	Span Power	ON, OFF	ON
SALM	Shelf Alarm	EN, DIS	EN

Loopback Options Display ("LPBK")

Mode	Select	Loopback State	Loopback Description
LPBK	HTUC	Net	Network loopback at HTU-C
		CST	Customer loopback at HTU-C
		NONE	No active loopback
	HTUR	BLB	Bilateral loopback at HTU-R
		NET	Network loopback at HTU-R
		CST	Customer loopback at HTU-R
		NONE	No active loopback
	HRE1	NET	Network loopback at HRE1
		CST	Customer loopback at HRE1
		NONE	No active loopback
	HRE2	NET	Network loopback at HRE2
		CST	Customer loopback at HRE2
		NONE	No active loopback

WARRANTY

Carrier Network products manufactured by ADTRAN and supplied under Buyer's order for use in the U.S. is ten (10) years. For a complete copy of ADTRAN's U.S. Carrier Network Equipment Warranty: (877) 457-5007, Document 414.

COMPLIANCE CODES

This product is intended for installation in restricted access locations only and in equipment with a Type "B" or "E" installation code.

Input current at maximum load is 0.7 A at –48 VDC. Maximum output at over current condition is 165 mA at –190 VDC.

CODE	IN	OUT
Installation Code (IC)	A	–
Telecommunication Code (TC)	–	X
Power Code (PC)	F	C

■ For a complete Installation and Maintenance Practice: (877) 457-5007, Document #455. Please have your fax number available. ■

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TURN-UP & TROUBLESHOOTING GUIDE

PRICING AND AVAILABILITY 800.827.0807
TECHNICAL SUPPORT 800.923.8726
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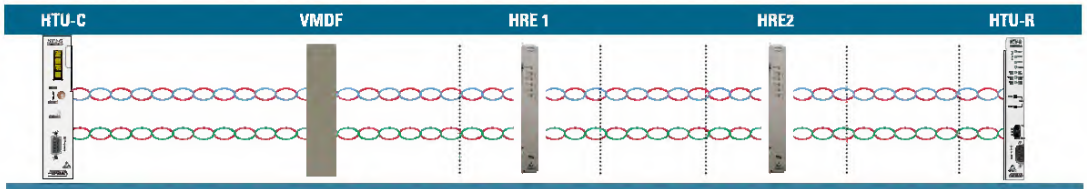
INSERTION LOSS MEASUREMENTS

Frequency (kHz)	Maximum Loss Data (dB)
10000	15.00
50000	25.50
100000	30.00
150000	32.75
196000	35.00
200000	35.25
250000	37.50
325000	42.00

NOTE: If your TIMs is unable to transmit 200 kHz tone, set the TIMs to one of the frequencies shown above and compare the received signal to the maximum loss at that frequency.



	A	B	C	D	E	F
	t-t Voltage	t-t Voltage	t-t Voltage	t-t Voltage	t-t Voltage	t-t Voltage
Circuit with 2 HREs (open at frame)	185 - 190	N/A	N/A	N/A	N/A	N/A
Circuit with 0 or 1 HRE (open at frame)	145 - 150	N/A	N/A	N/A	N/A	N/A
HTU-C / HTU-R	145 - 150	145 - 150	130 - 145	N/A	N/A	125 - 130
HTU-C / HRE1 / HTU-R	130 - 135	110 - 135	110 - 135	N/A	N/A	100 - 135
HTU-C / HRE 2 / HTU-R	185 - 190	160 - 185	160 - 185	140 - 185	140 - 185	130 - 185

NOTE: All measurements taken with HTU-C installed. With the HTU-C unseated or with protector removed at VMDF, t-r resistance will be cable resistance plus 3 ohms (for either HRE or HTU-R).

Turn-up Guide

1. Set option switches according to specific circuit design
2. Install HTU-C and HTU-R
3. The status LED should be green, no alarm indications on the four-character display (FCD) and synchronization has occurred
   (a) HTU-C will display LLOS if not connected to network (no DSX present; LED will be solid red).
   (b) HTU-R will have red ALM LED if customer not connected. LP1, LP2, line coding (B8ZS or AMI) and framing (ESF or SF) (if not UNFR) LEDs should be illuminated.
4. If Status LED is green:
   (a) Verify that the signal quality is the same on each loop. Ensure signal quality indicators do not fluctuate.
   (b) Verify that the loop loss is within design limits. If there is a difference of more than 1 dB between the two loops, a problem exists with the cable pairs.
   (c) If errors occur, use the Current System Status and Performance History screens to determine where they are occuring. See Troubleshooting Guide.
5. If everything checks out, proceed with BERT testing.

Troubleshooting Guide

The HTU-C status LED is flashing green and the FCD indicates "LERR," "HER1," "HER2" or "LBPV" but no errors are indicated by the HTU-R

- A BPV, Frame error (SF) or CRC error (ESF) has been detected at the DSX-1 interface. Possible network or wiring problem between the HTU-C and the DSX. This is not an indication of problems on the HDSL loops.

The HTU-R DS1 LED is Flashing, but no Errors are Indicated by the HTU-C

- A BPV, Frame Error (SF) or CRC Error (ESF) has been detected at the DS1 interface. This indicates a wiring problem or a B8ZS/AMI mismatch between the HTU-R and the customer equipment. This is not an indication of problems on the HDSL loops.

The HTU-R has Power, but LP1 and LP2 LEDs are Dark. The Unit cannot Sync with the HTU-C

- Simplex power for powering the HTU-R can be passed over cable pairs that contain load coils or that are too long for HDSL synchronization. Using a TIMS, verify the circuit is within design limits.
- The HTU-R will power up as long as there is at least one good conductor on each loop. To test, remove the protector plug at the MDF and measure t-r resistance to the HTU-R on both loops. The HTU-R will place a 3 ohm short between t-r on both loops. An extremely high impedance indicates an open conductor. An extremely low reading on one loop may indicate a t-r short in the field. In the field, measure t-t and t-r voltage with the HTU-C installed and compare to the chart above. If these voltages are not present, open pairs or mis-wiring is indicated. As with other circuits, standard resistance measurements between each conductor and ground should also be used to test for a grounded conductor.
- A high resistance open which degrades to the point that it causes the circuit to lose sync can be "resealed" by reseating the HTU-C. Test the cable pairs before reseating the HTU-C.

Running Excessive Errors on the Loop

- Measure t-r resistance as described above. If the pairs are unbalanced by more than 4 ohms, or a measurement varies a great deal, this could indicate a high resistance open or an intermittent fault on the loop with the higher measurement. A TDR is typically required to locate this splice for repair.
- Excessively long bridged taps can also cause errors. Check the records and/or use a TDR to verify the location and length of bridged taps.
- Using ADTRAN's "Performance History" screen, it is often possible to see that many roore errors are being received on a particular loop or at a particular unit. The fault will typically be very close to the unit receiving the most errors.

No Power at the HTU-R

- This could be caused by a loop with two open conductors. Measure t-r resistance from the MDF to the HTU-R or use the voltage chart to see which pair is open.

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